11.12 INTERPRETING ANALYTICAL RESULTS

11.12.1 Inductively Coupled Plasma(ICP) Method

The ICP scan is an economical method to determine if water or sediment samples have high levels of trace metals. It shall be understood however that the ICP scan is not corrected for interferences and may not have standards in the range of the level of detection for all metals scanned. Therefore, the precision and accuracy of the ICP are questionable. In addition, the ICP scan detection level is much higher than if each metal were analyzed individually using the recommended QA/QC protocols.

The following metals can be analyzed using an ICP scan at the DEQ Chemistry Bureau:

TRACE METALS	DETECTION LEVEL (PPM) WATER MATRIX	SEDIMENT MATRIX DILUTION	DRINKING WATER STANDARD (PPM)
Aluminum	0.01	10	
Antimony	0.01	10	0.006
Arsenic	0.05	10	0.05
Barium	0.01	10	2.00
Berylium	0.01	10	0.004
Boron	0.05	10	
Cadmium	0.03	10	0.005
Calcium	1.00	100	
Chromium	0.01	10	0.10
Cobalt	0.01	10	
Copper	0.01	10	
Iron	0.01	10	
Lead	0.05	10	0.015
Magnesium	1.00	200	
Manganese	0.01	10	
Molybdenum	0.01	10	
Nickel	0.02	10	0.10
Potassium	1.00	10	
Selenium	0.05	10	0.05
Silica	1.00	400	
Sodium	5.00	100	
Stontium	0.01	10	
Titanium	0.01	10	
Vanadium	0.01	10	
Zinc	0.01	10	

The Chemistry Bureau reports ICP Scans as a printout directly from the instrument. The report must be interpreted to incorporate any dilutions made during the analyses. Sediment samples are initially analyzed using 0.25mg diluted to 50ml. Further dilutions may be used for trace metals that exceed

standards.

11.12.2 Analytical References

Analytical Methods and Interpretation

Standard Methods For The Examination of Water and Wastewater, 18th Edition (1992)

Study and Interpretation of Chemical Characteristics of Natural Water, United States Geological Survey Water-Supply Paper 2254.

Protection of Public Water Supplies from Ground-Water Contamination (1985), EPA/625/4-85/016. Center for Environmental Research Information, Cincinnati, 45268

Design of Water Quality Monitoring Systems. Robert C. Ward, Jim C. Loftis and Graham B. McBride (1990), Van Nostrand Reinhold - New York. Library of Congress Catalog Card No. 90-46323.

National Handbook of Recommended Methods for Water-Data Acquisition, Office of Water Data Coordination Geological Survey, U.S. Department of the Interior, Reston, Virginia (1977) and Revisions.

Methods and Guidance for the Analysis of Water, EPA-821/C-97-001 CD-ROM, US EPA, Office of Water, Washington, D.C., 20460. The newest resource is *Methods and Guidance for the Analysis of Water* CD-ROM. This resource provides a comprehensive collection of EPA wastewater and drinking water methods and guidance documents in one source. Included on this CD-ROM are the 100, 200, 300, 500, 600, and 1600 series methods; and guidance documents on trace metals, oil and grease, and the streamlinig initiative. The CD-Rom includes a powerful text search engine to allow searches by method number, analyte name, and key words. Further, all methods and guidance are presented in Adobe Acrobat (PDF) format and are electronically linked to allow users to instantly access methods by clicking highlighted words in the analyte list and table of contents.